

QUESTIONS AND ANSWERS

PLEASE REFER TO THE GENERAL FAQs SECTION OF ARPA-E'S WEBSITE (<http://arpa-e.energy.gov/?q=faq/general-questions>) FOR ANSWERS TO MANY GENERAL QUESTIONS ABOUT ARPA-E AND ARPA-E'S FUNDING OPPORTUNITY ANNOUNCEMENTS. ADDITIONAL QUESTIONS SPECIFIC TO THIS FOA ONLY ARE INCLUDED BELOW. PLEASE REVIEW ALL EXISTING GENERAL FAQs AND FOA-SPECIFIC QUESTIONS BEFORE SUBMITTING NEW QUESTIONS TO ARPA-E.

I. Full Application Phase Questions:

Q1. My team would like to apply for Topic O (Direct Removal of Carbon Dioxide in Oceanwater) in DE-FOA-0001953. However, our application would be very similar to one we just submitted in response to DOE Fossil Energy's call DE-FOA-0002188 (Novel R&D for the Direct Capture of Carbon Dioxide from the Atmosphere). Are there any rules against submitting similar proposals to these two agencies or against being awarded funds from both?

ANSWER: Yes. As set forth at FOA Section III.C.2, *[s]ubmissions that are not distinct in scientific approach or objective from activities currently supported by or actively under consideration for funding by any other office within Department of Energy may be considered non-responsive.* Applicants are required to disclose all pertinent current funding and pending funding applications in the appropriate part of the Business Assurances and Disclosures Form.

Q2. This section contains a statement that " Approaches that consume compounds or chemicals in stoichiometric proportion to the CO2 captured" will be deemed non-responsive. This language is confusing, as it would cover every possible solution including all of the ones explicitly called for in the solicitation.

ANSWER: The aim of this statement is to discourage approaches that would require entirely new industries to supply reagents at the scale of billions of metric tons per year (Gt/y) -- with potentially undesirable, unusable, or unsalable Gt/y coproducts – in order to achieve Gt/y scale CO2 removal. Applicants proposing technologies requiring large chemical inputs should justify their use from a lifecycle CO2 and economic perspective.

Q3. Would CO2 capture or removal from domestic or industrial wastewater streams be considered under the 'other natural waters' category of this FOA?

ANSWER: Generally, we do not consider industrial or domestic wastewater streams to be natural waters. However, if the proposed technology has broad applicability in CO2 removal from natural waters, or waters with similar compositions, it is eligible. In such approaches, applicants should describe how the proposed technology has broad applicability to CO2 removal from natural waters.

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Q4.1 I have a question that applies to DE-FOA-0001953, in particular both of the "Direct Removal of Carbon Dioxide" topics (i.e., both air and ocean). A "Levelized Cost of Capture" of 100 \$/t CO₂ is mentioned. I would like to clarify what should be included in this number. From the tables provided, it sounds like the cost of capture, any required regeneration of capture media, and potentially CO₂ compression at the output, should all be included, is that correct?

ANSWER: Yes. Applicants should specify the outlet CO₂ state (concentration, temperature, pressure) and the species and concentrations of any impurities.

Q4.2 Also, it appears ARPA-E is open to processes with a range of outlet pressures and CO₂ purities, is that correct?

ANSWER: The costs of capture and required regeneration should be included. Applicants should describe whether or not CO₂ compression is relevant to their particular process or application, and should include it or not as appropriate.

Q5. We are looking to apply to Topic "Direct Removal of Carbon Dioxide from Oceanwater" in the attached announcement and would just like to confirm that we are using October 2020 as the start date?

ANSWER: The anticipated date of selection for award negotiations is October 2020. The effective date of agreements resulting from this Targeted Topic is expected to be January 2021.

Q6. For FFRDCs applying to DOE-FOA-0001953, Topic O, who should be listed as the program manager on the FWP?

ANSWER: This field may be left blank.

Q7. Can you please elaborate on the appropriate start date for these [two] topics [O and P] under announcement DE-FOA-0001953 I saw a selection date of October 2020, but was not sure when the period of performance should start?

ANSWER: Refer to STINPA Topic Q FAQ 5 above.

Q8. I am interested in submitting for DE-FOA-0001953, Subtopic O, Special Program Announcement "Direct Removal of Carbon Dioxide from Oceanwater". I would like to know if under "2. Novel Concepts Not Involving Salt Splitting, Biological methods for CO₂ removal" (PDF 161/169) my idea would be acceptable. [Balance of question omitted.]

ANSWER: ARPA-E will not pre-assess an applicant's proposal. Prospective applicants must review the technical requirements of the Targeted Topic and independently determine whether their proposed concept warrants a submission.

Q9. I would like to better understand how you define your techno economic performance targets.

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Q9.1 How do you define the “Second Law Efficiency” for a biological method to remove CO₂? Seaweed cultivation does require harvesting technology and vessels, but the Marine Permaculture system itself only uses wave energy to operate.

ANSWER: For a process that consumes energy, second law efficiency is the thermodynamic minimum energy required to transform process inputs to outputs divided by the actual energy consumed.

Applicants must describe, in a manner as detailed and quantitative as possible, how their concept, if successful, would enable the technoeconomic performance targets identified in the table in Section XV.2.A. of the FOA. However, the technoeconomic performance targets are not required to be achieved by the end of the project period of performance.

Q9.2 “Embodies emissions as % of the lifecycle captured emissions”: Do you define the embodied emissions as emissions of the technical components only, taking into account the full life cycle (“cradle-to-grave”)?

ANSWER: Embodied emissions include the lifecycle GHG footprints of all system components.

Applicants must describe, in a manner as detailed and quantitative as possible, how their concept, if successful, would enable the technoeconomic performance targets identified in the table in Section XV.2.A. of the FOA. However, the technoeconomic performance targets are not required to be achieved by the end of the project period of performance.

Q10.1 I am unclear as to what the second law efficiency performance metric means (p160 of FOA) [refer to FOA Appendix O, Section 2.A] ...

ANSWER: Refer to STINPA Topic O FAQ 9.1.

Q10.2 ... and how best to demonstrate.

ANSWER: Applicants are responsible for the content of their applications.